

## PATENT CLAIMS

1. A hearing aid with detection and automatic selection of an input signal, comprising at least two analog input signal sources, at least one analog-to-digital  
5 converter for generating, from an analog input signal, a corresponding digital input signal, and further processing means for digital processing of input signals, wherein the hearing aid further comprises input signal routing means for selectively routing each one of one or more selected input signals to the further processing means, and signal detection means configured to analyse the analog  
10 input signals and to control the signal routing means according to results of said analysis.
2. The hearing aid according to claim 1, configured to cause, when the signal detection means detects a relevant signal on a given analog input signal, an  
15 analog-to-digital converter to digitise said analog input signal and to transmit the digital input signal to the further processing means.
3. The hearing aid according to claim 2, further comprising an analog input multiplexer for selectively routing each one of one or more selected analog input  
20 signals to an associated analog-to-digital converter, and where the analog input multiplexer is configured to be controlled according to the analysis results of the signal detection means.
4. The hearing aid according to claim 2, further comprising a second analog-to-  
25 digital converter that is arranged to digitise a given analog input signal, and where the hearing aid is configured to power up the second analog-to-digital converter if the signal detection means indicates that said given analog input signal comprises a relevant input signal.

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5. The hearing aid according to claim 2, configured to maintain circuitry associated with audio signal processing in a powered down state while the signal detection means does not detect a relevant signal, and to power up said circuitry if the signal detection means does detect a relevant signal on an analog input signal.

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6. The hearing aid according to one of the preceding claims, comprising a signal detection means configured to analyse a single signal, and a further input multiplexer for alternately selecting one of the analog input signals and feeding it to the signal detection means.

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7. The hearing aid according to one of claims 1 to 5, wherein the signal detection means is configured to indicate the presence of a relevant signal in an input signal if the amplitude of the input signal exceeds a predetermined amplitude threshold during a predetermined minimum time within a predetermined time window.

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8. The hearing aid according to one of claims 1 to 5, wherein the signal detection means are implemented by analog components or within a mixed-signal integrated circuit.

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9. A method for detecting and automatically selecting an input signal in a hearing aid in which at least two analog input signals are available, comprising the steps of

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- analysing the analog input signals and detecting, for each analog input signal, whether it comprises a relevant signal,
- selecting, according to results of said analysis, at least one selected input signal that comprises a relevant signal for further processing, and
- controlling a signal routing means to selectively route each one of the at least one selected input signals to further processing means.

10. The method according to claim 9, further comprising the step of
- causing, when the signal detection means detects a relevant signal on a given analog input signal, an analog-to-digital converter to digitise said analog input signal and to transmit the digital input signal to the further processing means.
11. The method according to claim 10, further comprising the step of
- controlling, according to the analysis results of the signal detection means, an analog input multiplexer to forward each one of the at least one selected input signal to an associated analog-to-digital converter.
12. The method according to claim 10, where the hearing aid further comprises a second analog-to-digital converter that is arranged to digitise a given analog input signal, and comprising the further step of
- powering up the second analog-to-digital converter if the signal detection means indicates that said given analog input signal comprises a relevant input signal.
13. The method according to claim 10, comprising the further step of
- maintaining circuitry associated with audio signal processing in a powered down state while the signal detection means does not detect a relevant signal, and
  - powering up said circuitry if the signal detection means does detect a relevant signal on an analog input signal.
14. The method according to one of claims 9 to 13, wherein the step of analysing each of the input signals is accomplished by providing a single detection circuit alternately with each of the input signals.

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15. The method according to one of claims 9 to 13, further comprising the steps of
- determining whether the amplitude of the input signal exceeds a predetermined amplitude threshold during a predetermined minimum time within a predetermined time window, and
  - indicating the presence of a relevant signal in an input signal if this is the case.
16. The method according to claim 14, further comprising the steps of
- determining whether the amplitude of the input signal exceeds a predetermined amplitude threshold during a predetermined minimum time within a predetermined time window, and
  - indicating the presence of a relevant signal in an input signal if this is the case.
17. The method according to one of claims 9 to 13, wherein the step of detecting whether an analog input signal comprises a relevant signal involves analog comparison operations of the analog input signal or of analog signals derived from the analog input signal to analog reference signals.